UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,800	02/16/2001	Erich Strasser	56/349	5551

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EXAMINER
SONG, HOON K

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 02/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

-- The MAILING DATE of this communication appears on th cover sheet with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-34* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-34* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *16 February 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1. ☒ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5,6* .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4-14, 16-23 are rejected under 35 U.S.C. 102(b) as being anticipated

by Schmitt (US 4618940).

Regarding claims 1, 13, 18, 22 Schmitt teaches a method for operation of a

position measuring device, which comprises a scanning unit that defines a scanning

plane and a measuring graduation that defines a measuring graduation plane, said

scanning unit and said measuring graduation are movable relative to one another during

a measurement operation, and position-dependent output signals are generated during

scanning performed by said scanning unit, said method comprising (figure 1):

regulating (K) said position-dependent output signals to constant signal

amplitudes by action on a controlling variable;

ascertaining a value of said controlling variable (R) required for said regulating;

and

displaying (A) said value of said controlling variable (column 2 line 10+).

Regarding claims 2, 14, 16-17, Schmitt teaches that the method of claim 1,

further comprising:

converting said value of the controlling variable into a digital signal suitable for serial transmission; and

transmitting said digital signal to an electronic evaluation unit downstream of said position measuring device (6, column 2 line 10+).

Regarding claims 4, 19-20, Schmitt teaches that the method of claim 1, wherein said regulating said position dependent output signals to a constant signal amplitude comprises varying a current supply of a transmission coil as a function of said controlling variable (column 2 line 10+).

Regarding claims 5, 21, Schmitt teaches that said regulating said position dependent output signals to a constant signal amplitude comprises varying a gain of an amplifier element as a function of said controlling variable (column 2 line 10+).

Regarding claims 6, 23, Schmitt teaches that the regulating said position dependent output signals to a constant signal amplitude comprises varying a luminosity of a light source as a function of said controlling variable (column 2 line 10+).

Regarding claim 7, Schmitt teaches that the method of claim 2, further comprising transmitting said digital signal in a serial protocol at a predetermined bit width to said electronic evaluation unit (6, figure 2).

Regarding claim 9, Schmitt teaches that said displaying comprises having said value of said controlling variable displayed in a form of an alphanumeric variable (column 3 line 25+).

Regarding claim 10, Schmitt teaches that said displaying comprises having said value of said controlling variable displayed in graphic form (column 3 line 25+).

Regarding claim 11, Schmitt teaches that said setting is performed by a

calibration element (column 2 line 10+).

Regarding claim 12, Schmitt teaches that said position-dependent output signals

comprise a first periodic signal A = Ao * sin (xt) and a second periodic signal B = Bo *

cos(xt), said method further comprising:

forming a variable $R^2 = A^2 + B^2$ which is representative of said value of said

controlling variable used during said regulating (column 5 line 30+).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 15, 24-34 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Schmitt in view of Graham et al. (US 4593194).

Regarding claims 3, 15, 24, 26 and 31-32, Schmitt teaches a method for

operation of a position measuring device, which comprises a scanning unit that defines

a scanning plane and a measuring graduation that defines a measuring graduation

plane, said scanning plane and said measuring graduation plane being separated by a

scanning spacing, said

scanning unit and said measuring graduation are movable relative to one another during

a measurement operation, and position-dependent output signals are generated during

scanning performed by said scanning unit, said method comprising:

regulating said position-dependent output signals to constant signal amplitudes

by action on a controlling variable;

ascertaining a value of said controlling variable required for said regulating;

displaying said value of said variable that directly corresponds to said actual

scanning spacing.

However, Schmitt merely teaches converting said controlling variable into a

variable that directly corresponds to an actual scanning spacing.

Graham teaches optical encoder with digital gain compensation controlling

source intensity.

In view of Graham, it would have been obvious to an artisan of ordinary skill in

the art at the time the invention was made to Graham's method of digitally controlling

the signal amplitude values in order to determine scale position relative to the mask

(scanning spacing, column 1 line 34+). Accordingly one would be motivated to adopt

the method of correcting scanning spacing by digitally compensating the amplitude of

the error signal because it would provide an optical encoder which is continuously,

automatically self trimming and which therefore compensates for electrical variation in

the components of the encoder as such variations may develop over time (column 2 line

60+). Further, it would provide an optical encoder which has individual automatic gain

control capability for each photo-detector in the encoder over the entire range of signal

values produced by the photo-detector, thus rendering each such signal a reliable

source of position and movement information over its entire range of values (column 2

line 65+).

Regarding claim 8, Schmitt teaches that further comprising converting said transmitted value of said controlling variable into a variable that corresponds directly to said current scanning spacing (column 3 line 25+)

Regarding claim 25, Schmitt teaches that further comprising:

converting said value of said controlling variable into a digital signal suitable for serial transmission; and

transmitting said digital signal to an electronic evaluation unit downstream of said position measuring device (6, column 2 line 10+).

Regarding claims 27, 30, Schmitt teaches that said regulating said position-dependent output signals to a constant signal amplitude comprises varying a current supply of a transmission coil as a function of said controlling variable (column 2 line 10+).

Regarding claim 28, Schmitt teaches that said regulating said position dependent output signals to a constant signal amplitude comprises varying a gain of an amplifier element as a function of said controlling variable (column 2 line 10+).

Regarding claim 29, Schmitt teaches that said regulating said position dependent output signals to a constant signal amplitude comprises varying a luminosity of a light source as a function of said controlling variable (column 2 line 10+).

Regarding claim 33, Schmitt teaches that said setting is performed by a calibration element (column 2 line 10+).

Regarding claim 34, Schmitt teaches that said position-dependent output

signals comprise a first periodic signal A = Ao * sin (xt) and a second periodic signal B = Bo * cos(xt), said method further comprising:

forming a variable $R^2 = A^2 + B^2$ which is representative of said value of said controlling variable used during said regulating (column 5 line 30+).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon K Song whose telephone number is 703-308-2736. The examiner can normally be reached on 8:30 AM - 5 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-4858 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Hoon K. Song
January 19, 2003